Message

From: Charles G. Howell [CGHowell@azr.com]
Sent: 8/4/2021 9:21:51 PM
To: brent.burch [brent.burch@ncdenr.gov]; Jeff Menzel [jeff.menzel@ncdenr.gov]
CC: Timothy Basilone [tbasilone@azr.com]; Kobus de Wet [kdewet@azr.com]; Morris, Sean [sean.morris@ncdenr.gov]; Johnston, John E. [Johnston.John@epa.gov]; Garcia, Javier [Garcia.Javier@epa.gov]; Woosley, Julie [Julie.Woosley@ncdenr.gov]
Subject: RE: [External] AZP Raffinate Pond
Attachments: 2021-8-3_Pace Lab Analytical Results.pdf; Sampling Locations.docx; Zinc Raffinate Tech. Data Sheet.pdf; Raffinate Composition.xlsx

Brent, Jeff,

This is a follow-up to your conversation with Tim Basilone earlier this afternoon and your site visit yesterday as well as a response to previous emails from each of you received on Friday July 30, 2021.

First, as we just discussed and as a follow-up to our call on Thursday advising you of our preliminary, uncertified results from soil sample during our liner replacement project, we now have the Pace Analytical results from those soil samples which are generally comparable to the results from our plant lab we previously reported to you. Please see the Pace results attached.

Further, as you requested during your site visit yesterday, we pulled two surface water samples at the locations you identified from the stream west of the raffinate basin which were also sent to Pace. Later in the evening we collected additional samples of the two previous locations and one further downstream for preliminary analysis by the plant lab. The approximate locations of each are marked on the attached drawing. As discussed with Jeff today, we are disappointed to learn that the preliminary results from our plant lab detected cadmium in the sample locations B and C on the attached drawings. We intend to collect additional samples from location "C" as well as another sample "D" as this stream enters the river, and those samples will be sent to a certified lab.

In response to DEQ's email questions received July 30, 2021, we offer the following:

Question: When were the variations in appearance of the sand surface first observed and when were the soil samples taken?

EnSafe personnel were on site to observe the liners being removed from the raffinate pond. While the lowermost liner was being removed on Wednesday, July 28, 2021, some discoloration of the underlying sand was noted. It was not clear whether this discoloration was related to a release or was lithologic. Therefore, the decision was made to collect samples prior to resuming work. We received the preliminary results from our plant lab on the morning of the 29th, at which time we contacted you, EPA, and NRC.

Question: Provide analytical results from samples taken under the raffinate pond liner:

As previously explained, soil samples collected from under the pond liner were split for analysis between our plant lab which is not certified and Pace Analytical. Attached are the analytical results for soil and liquid samples collected from hand borings in soil beneath the liner obtained from Pace Analytical yesterday evening, August 3, 2021.

Please note that the values for some metals, especially cadmium and lead, are lower in the Pace lab report than were reported to the NRC using in-plant data.

Question: Raffinate Solution Profile:

Attached are two files, including a Technical Data Sheet and analytical results providing maximum concentrations of constituents contained in Raffinate.

Question: Surface Water Samples:

As discussed above, as requested by you, surface water samples were collected on August 4, 2021, from the drainage channel located west of the raffinate pond. These samples were sent to Pace Analytical for expedited analysis for total RCRA metals and zinc. Conductivity and pH were measured in the field. Jeff Menzel was present to observe the collection of these samples. We anticipate results for these analyses will be received from Pace by the end of the week at which time we will provide these results to you.

Question: You requested TCLP analysis for soil samples.

We have not obtained this information since the TCLP is for waste characterization purposes for waste disposal. Our results are being compared to applicable soil and surface water standards and action levels.

We are working diligently with EnSafe to develop a draft work plan to respond to the apparent failure of the pond liner. We hope to provide the proposed work plan to DEQ and EPA no later than Friday.

In the meantime, we are also evaluating means by which we might resume limited operations while also allowing our response actions to continue concurrently.

Please advise me if you have any questions or require additional information.

Respectfully submitted,

Charles Howell
Environmental Manager
American Zinc Products, LLC
484 Hicks Grove Rd.
Mooresboro, NC 28114
O: (828) 919-3139
C: (828) 748-5636
cghowell@azr.com

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An AZR Company

From: Burch, Brent <brent.burch@ncdenr.gov>
Sent: Friday, July 30, 2021 2:56 PM
To: Charles G. Howell <CGHowell@azr.com>
Cc: Timothy Basilone <tbasilone@azr.com>; Kobus de Wet <kdewet@azr.com>; Menzel, Jeff <jeff.menzel@ncdenr.gov>; Morris, Sean <sean.morris@ncdenr.gov>; Johnston.John <Johnston.John@epa.gov>; Garcia, Javier <Garcia.Javier@epa.gov>; Woosley, Julie <julie.woosley@ncdenr.gov>
Subject: RE: [External] AZP Raffinate Pond

Thank you for the email response, Mr. Howell. At first glance, I do have some questions that I would appreciate clarity on.

1. Can you provide a date for when the variations in the appearance of the sand surface were first observed?

2. Can you provide a date for when the soil samples below the liner system were taken?

As indicated in the information below, installation of the new liner system was implemented prior to receipt of sample results. Please be advised that installing liners and starting operations prior to a complete evaluation of the incident is doing so at your own risk. Once additional information is gathered, the Hazardous Waste Section will advise if any further actions that must be taken...Brent

Brent G. Burch
Compliance Branch Head, Hazardous Waste Section
Division of Waste Management
N.C. Department of Environmental Quality
P.O. Box 1427
Andrews, NC 28901

Direct Telephone: 828.321.9585
Cellphone: 919.270.2049
Email Address: Brent.Burch@ncdenr.gov

From: Charles G. Howell [mailto:CGHowell@azr.com]
Sent: Friday, July 30, 2021 2:05 PM
To: Burch, Brent <brent.burch@ncdenr.gov>
Cc: Timothy Basilone <tbasilone@azr.com>; Kobus de Wet <kdewet@azr.com>; Menzel, Jeff <jeff.menzel@ncdenr.gov>
Subject: [External] AZP Raffinate Pond

Mr. Burch,

I am providing this letter in follow up to our conversation yesterday regarding circumstances related to the raffinate pond located at the American Zinc Products (AZP) facility in Mooresboro, North Carolina. As discussed with you during our phone call, while in the process of replacing the liner system at the raffinate pond, it was determined from analysis of soil samples collected below pond liner that raffinate solution appears to have entered soil beneath the footprint of the pond.

After becoming aware of the analytical results of soil samples collected beneath the liner, a call was made to the National Response Center, after which we discussed this matter with you and in subsequent discussions with Jeff Menzel

and Rick Jardine of the USEPA emergency response section. We currently have a call in to John Johnston at USEPA to discuss this matter further in regard to pending work under the 3013 Administrative Order for the AZP facility.

The raffinate pond contained four synthetic liners, which included two separate liner systems each consisting of two liners. The uppermost liner system was installed on top of the underlying liner system in 2019, as part of renovation work completed at the facility during the shutdown preceding the facility re-start in 2020. More recently, repairs were made by our contractors to the uppermost liner to install patches over small areas where the upper liner had been breached. In addition, repairs have been made at the concrete pump structure where the synthetic liner is joined to the concrete walls of the structure.
Based on the advice of the contractor who installed the liner system, a project to remove and replace all the liners in the pond with one new liner system was planned and initiated during a facility shut down scheduled to occur this past week. In advance of the project, the pond was modified for this project by installing a barrier wall across the center of the pond to divide the pond into two sections. By dividing the pond into two sections, the liners in the pond could be removed and replaced with a new liner system in two phases, while shortening the length of time for the plant to be shut down.

Once overlying liners were removed from the northern area, the lowermost liner was exposed and inspected. The liner was observed to be intact, and no apparent breaches were identified. Following removal of the lowermost liner the underlying substrate surface, consisting of sand, was observed to be dry; however, there were variations in the appearance of the sand surface which suggested a potential release. Soil samples were taken in two locations in the base of the pond at various depths down to approximately 2-1/2 feet. During installation of hand borings to collect soil samples, some liquid was encountered in one of the borings. Soil samples were analyzed by our on-site laboratory and sent to a certified third-party laboratory. The results from our on-site laboratory identified elevated lead and cadmium concentrations which are indicative of a release of the raffinate solution. Following collection of the soil samples, our contractor proceeded with installation of the new liner system in the northern portion of the raffinate pond, as planned.

Based on the currently available information, we are unable to determine the source or amount of the potential release; however, based on our observations of the integrity of the bottom liner, it appears that a breach at the connection of the liner at the concrete pump structure is the most likely source of any release. Therefore, a leak detection system is being installed in the vicinity of the pump structure to enable monitoring for potential leakage. Once liner installation work in the northern portion of the raffinate pond is completed along with installation of the leak detection system, the pond will be placed in service and plant operation will commence.

As reported to you, AZP is in the process of developing a plan for investigating the subsurface in the vicinity of the raffinate pond. Soil borings will be installed to determine the general geology beneath the pond, the nature of underlying soil, and to determine if a groundwater aquifer is present above bedrock. If a groundwater aquifer is present above auger refusal, monitoring wells will be installed in the area. Soil samples will also be collected and analyzed to determine the extent of lead, cadmium, and zinc in subsurface soil. A copy of the investigation plan will be provided to you in advance of commencement of field activities. The plan will be implemented as soon as possible after all arrangements are finalized with a drilling contractor.

AZP with working with its contractor to develop a new design plan for upgrading the raffinate pond. Based on our current discussions with the contractor, we expect this upgrade project to be scheduled during the upcoming year. The current objective of the upgrade project is to eliminate the pump structure and complete installation of two ponds within the current footprint of the raffinate pond. Operating two ponds in the area will enable future maintenance work to be scheduled on each of the ponds individually while the facility is operating.

Until the upgrade project is implemented, the raffinate pond will be operated using only the northern portion of the former pond area. The pond will be operated with raffinate solution in the pond being kept to the minimum operable level. The leak detection system will be used to monitor for leakage to the subsurface.

As discussed with you, when completed we will provide to you a copy of our plan for investigating the subsurface area in the vicinity of the raffinate pond. We hope to have the plan completed next week and will begin planning with drilling contractors to implement the plan as soon as possible. The investigation plan will include details on sample analytical result and other information describing the raffinate pond. In addition, we will work with USEPA and John Johnstone to modify existing plans to incorporate information on the raffinate pond, and to include findings from the investigation into the 3013-work plan and report.

In summary, our plans consist of the following two objectives:

- Complete installation of new liners with a leak detection system in the northern portion of the raffinate pond and commence operation of the pond as described above, and
- Perform an investigation of subsurface soil conditions, including delineation of the extent of elevated zinc, lead and cadmium concentrations; and assess potential groundwater impact beneath the raffinate pond. Groundwater wells will be installed in the uppermost groundwater aquifer, if present above bedrock. Investigation work will be performed on the soil zone down to auger refusal or bedrock.

As we discussed, the raffinate pond is critical to plant operation and functions to continuously circulate raffinate solution to the zinc production process. Raffinate is a sulfuric acid solution containing dissolved metals, including primarily zinc, lead and cadmium. The pond must be in service during plant operations. Without the availability of the pond, the plant cannot operate. To enable work for replacement of the raffinate pond liners, the plant was shut down.

We will keep you informed of any changes or new information that becomes available as we prepare our investigation plan. Please feel free to contact me if you have any questions in the meantime.

Regards,

Charles Howell
Environmental Manager
American Zinc Products, LLC
484 Hicks Grove Rd.
Mooresboro, NC 28114
O: (828) 919-3139
C: (828) 748-5636
cghowell@azr.com

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An AZR Company